

San Diego *International* Airport



Gateway to America's Finest City

Biometrics for Airport Access Control

September 2004



Introduction

- **Overview of San Francisco International Airport**
- **Commitment to *exceed* Aviation Security regulatory standards—Aviation Transportation Security Act**
- **Historical and systems perspectives**
- **Strategies for deployment of Access Control System (ACS)**



Introduction (Cont'd)

- **SFIA implementation of Biometric Technology—*Recognition Systems Inc. (RSI)***
- **Dynamics of Biometric Access Control—*Increased Security/Reduced Vulnerability***



Introduction (Cont'd)

- **Advantages of *Biometric Technology***
- **Systems deployment, operations, administration, and performance**
- **Summary**

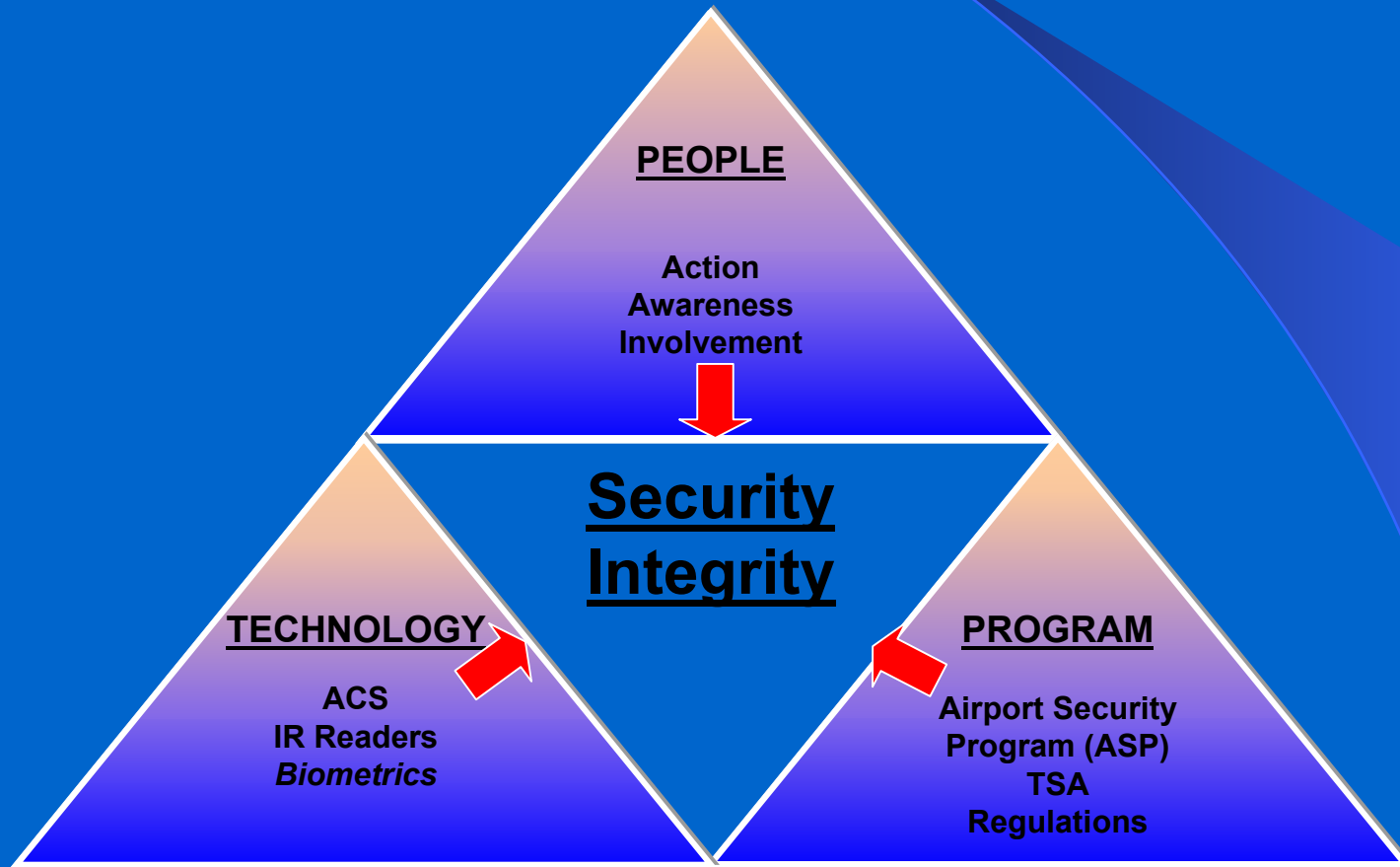


Security Philosophy

- **Ensure high security integrity**
- **Exceed TSA regulatory requirements**
- **Enhance security performance**
- **Improve systems with advanced technologies**
- **Elevate operational effectiveness and efficiency**



Aviation Security Vision



...Blending People, Programs and Technology



TSR 1542.207 -- “Secured Area”

- ***Objective***—greater control around terminal facilities, ramp and aircraft
 - Provide access to authorized individuals
 - Deny unauthorized access
 - Differentiate authorized areas for access



Critical Security Areas

- **Air Operations Area (AOA)**
- **Terminal Areas**
 - **Public Non-Sterile Areas**
 - **Public Sterile Areas (boarding areas)**
 - **Restricted Areas (employee offices)**
 - **Secured Area (aircraft and ramp)**



SAN DIEGO
INTERNATIONAL
AIRPORT



TSR 1542.207 – “Secured Area”



ID Card/Hand Geometry Readers provide access control



Authorized Access Control @ SFIA

- Begins with Identification (ID) Media—Card Reader
- Combines with Biometric Technology—Hand Reader



...Dual systems provide utmost access control



Access Control System Enrollment

- Application with employer's endorsement
- Valid supporting identification media
- Background investigation
- Fingerprint analysis



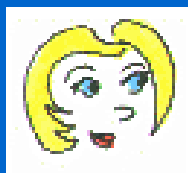
Biometric Choices



Hand Geometry



Fingerprint







Face



Iris



Biometric Comparisons

Requirements				
Enrollment –Low Failure Rate, Fast	✓		✓	
Low False Reject Rate	✓			✓
Low False Accept Rate	✓	✓		✓
Outdoor Performance Maintained	✓			
Fast Throughput	✓	✓	✓	
User Acceptance	✓		✓	
Large Scale Airport Access Experience	✓			

Hand Geometry Fits





Historical Perspective

- ***Access Control System (ACS)—
Biometric Technology...hand
geometry***
 - **Used at SFIA for the past 13 years**
 - **Initially...Domestic Terminals**
 - **New International Terminal Complex**
 - **Selected AOA perimeter facilities**



Systems Perspective

- ***ACS—Biometric Technology...hand geometry***
 - **Originally installed by Center Pointe Systems, Inc.**
 - **Started with 386 PC 33 MHz & 100 MB HD file server with DOS**
 - **Upgraded computer system 5 times**
 - **Today...two Pentium II PC 300 MHz cross connected file servers with new OS 2**



Overarching Mission of Biometrics

■ *Limitations of Card Reader System*

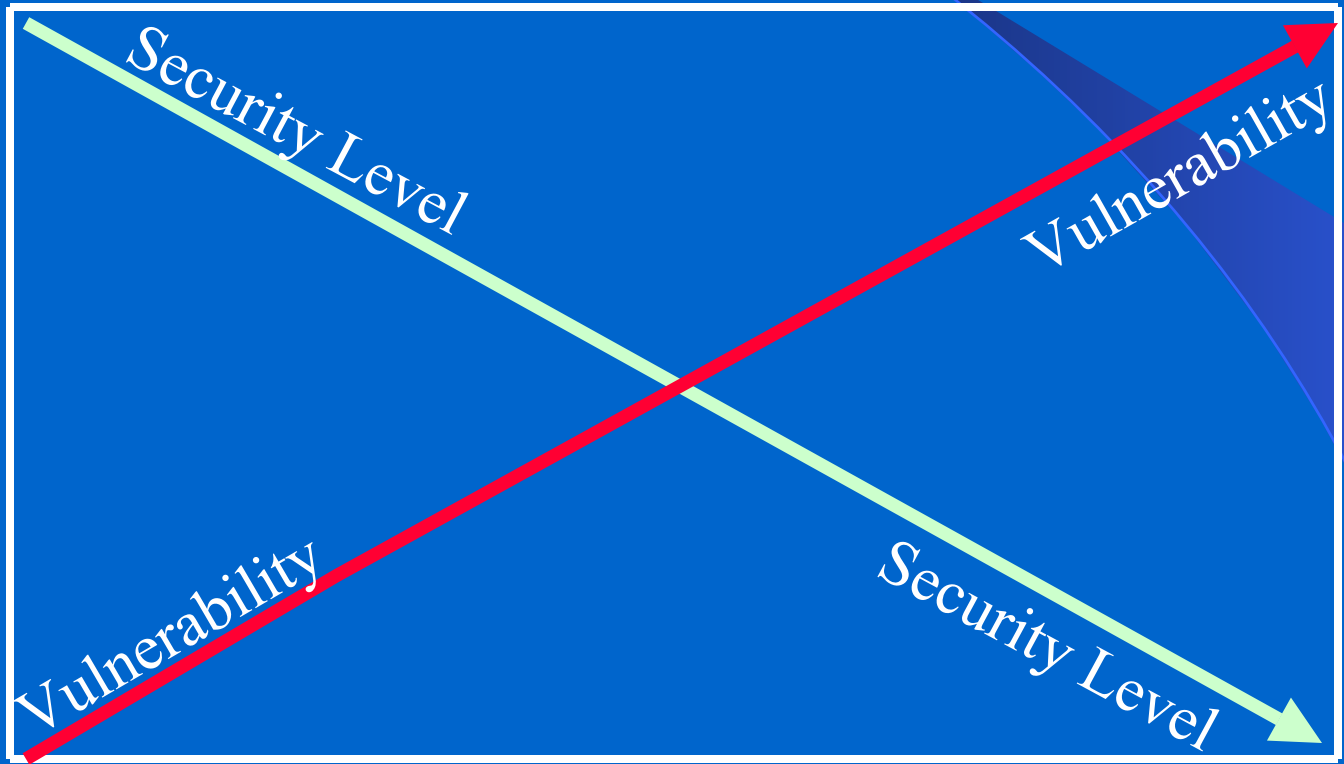
- Card readers **ONLY** identify authorized cards for access...not individuals

■ *Advantages of Hand Geometry System*

- Positively validates individuals with authorized access



Vulnerability Index



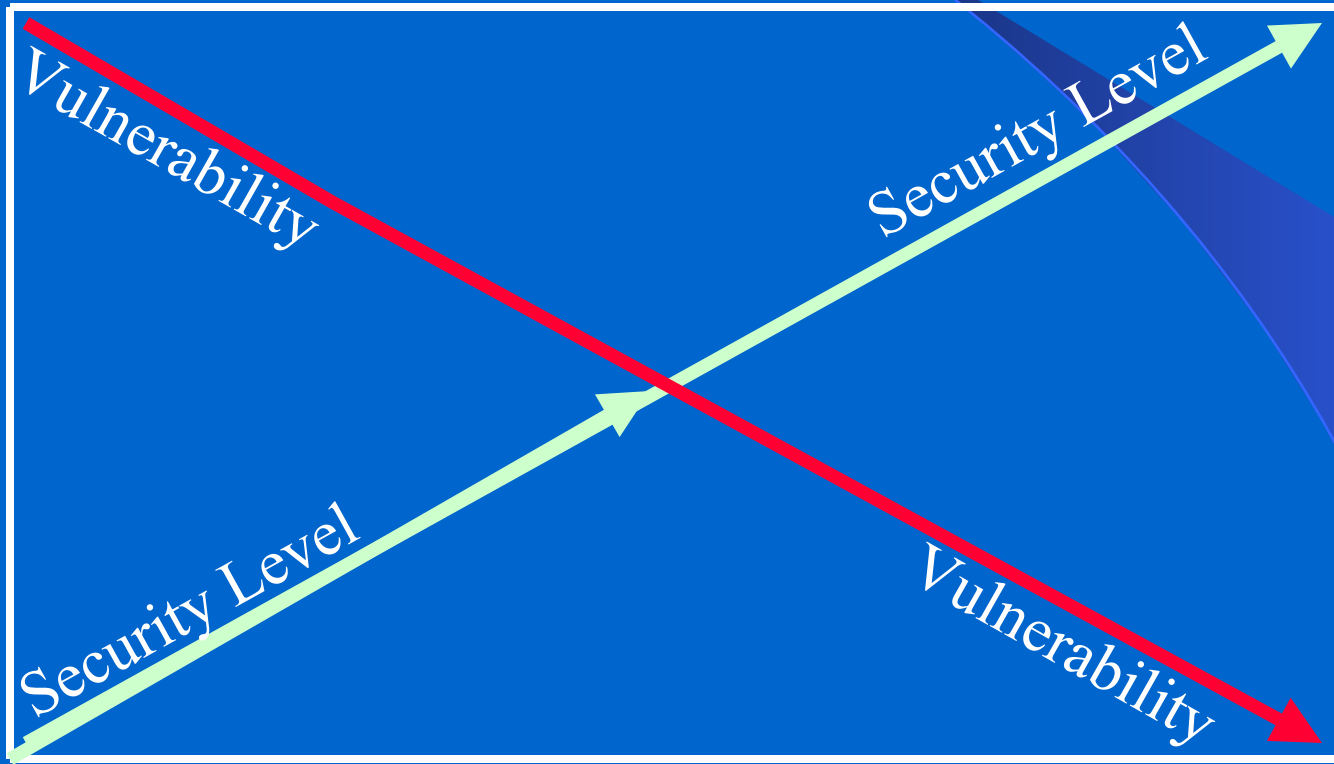
SIDA
ID



Increased Vulnerability
and Decreased Security



Vulnerability Index



SIDA ID



Increased Security and
Decreased Vulnerability



Personnel Requiring AOA Access

- Airport Commission, SFPD & SFFD
- Air Carriers and Cargo Operators
- Federal Agencies
- Concessionaires
- Catering Services
- Vendors
- Contractors



Biometrics Airport-wide

- **Approximately 1500 access portals**
- **200+ access portals equipped with Card/Biometric Hand Readers (full ACS)**
- **Deployed at all access portals leading directly to the *Secured Area***



Biometrics Performance/Data

- **System transactions—over 250,000 per day**
- **Average processing time—less than 15 seconds**
- **Reliability—99.99%**
- **System capability—upgradeable and expandable**



Deployment of RSI System



Access Portal leading to AOA





Access Control Architecture



**Turnstile Vestibule
with Card/Hand Geometry Reader**



Systems Database Administration

- **License and Permit Bureau**
 - Performs initial enrollment
- **Aviation Security**
 - Information Systems (IS) Technician programs and maintains database
- **Information Technology and Telecom**
 - Provides oversight, guidance and management



System Maintenance

- ***Airport Electrical Division***
 - MDI/RSI trained personnel
- ***Vendor/Contractor Support***
 - Provide hardware components and technical support
 - Assist SFIA team with installation



Organizational Responsibilities

- ***Aviation Security***
 - Policy and procedures
 - Regulatory compliance
 - Strategic planning
- ***License and Permit Bureau***
 - Enrollment & training
 - ID media issuance

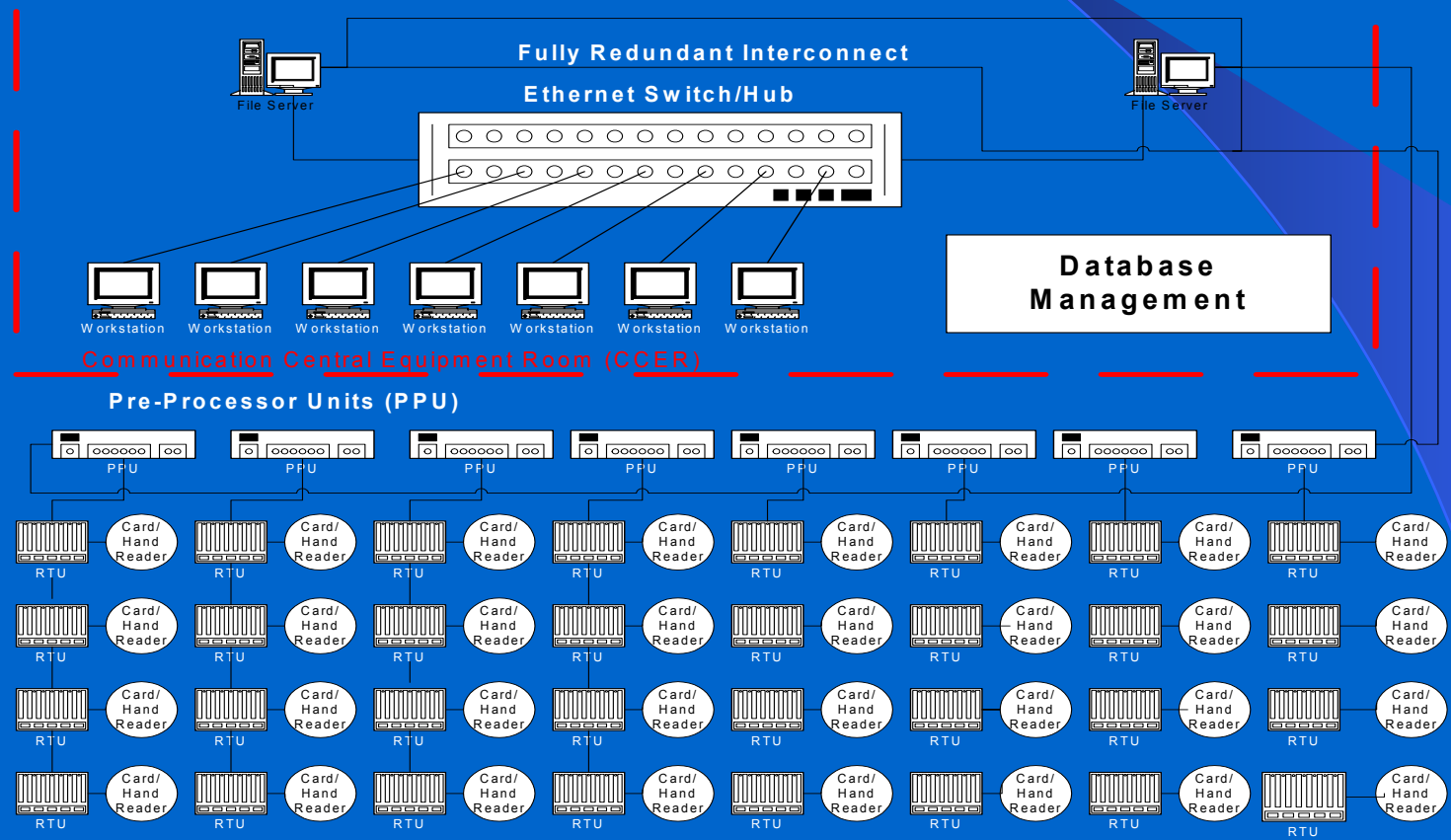


System Configuration

- **File server with PCs**
- **Telephone and fiber optic lines**
- **Uninterrupted Power Supply (UPS)**
- **Card *swipe* and biometric hand readers**
- **ID access media (badges)**



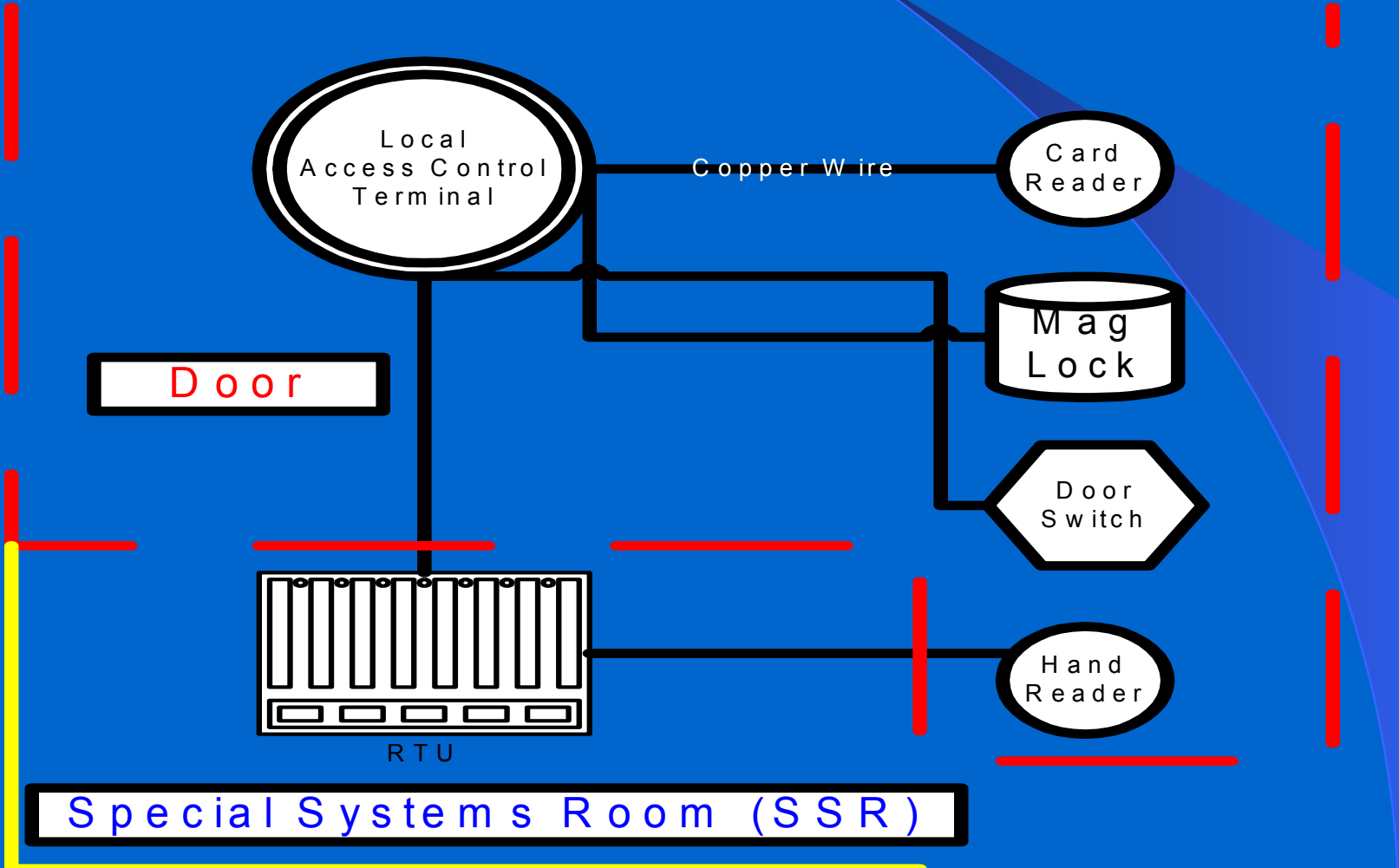
Access Control System Overview



Remote Terminal Units (RTU) shown with Card Readers/Hand Readers



Access Control System Operation





Access Control—Applying Error Rates

- A False Reject can occur with EVERY use of the system
- A False Accept can ONLY occur when an unauthorized person makes an attempt
- *“There are a lot more Good Guys”*

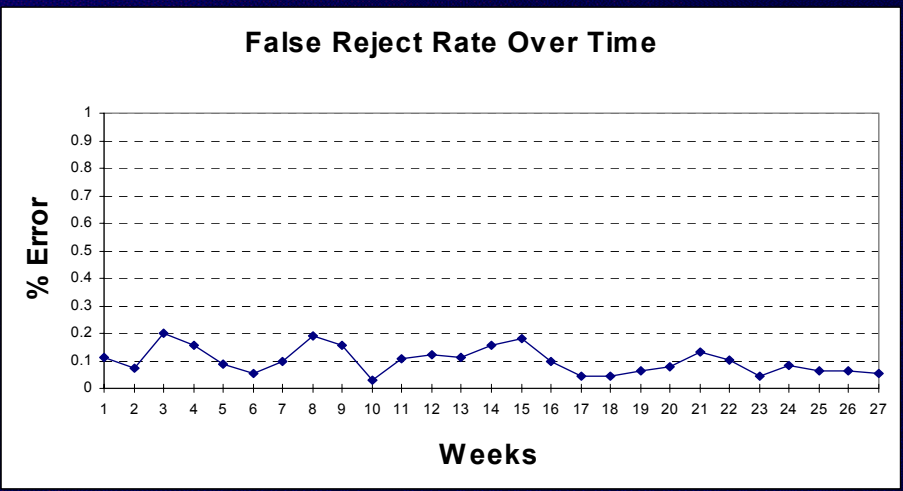
(quote by
Bill Spence, RSI)



Unparalleled Accuracy

The Lowest False Reject in the Field

- Field Demonstrated 0.1% False Reject Rate
 - Demonstrated average 0.1% false reject rate over 6 months
 - Data is from a US Nuclear Power Plant
 - Over 250,000 transactions
 - 2,800 users
 - 0.1% False Accept Rate





Unparalleled Speed

- ***High throughput***
 - Quick positioning time
 - Verification time 1 second or less
- ***A low false reject rate is CRITICAL...***
- **Authorized workers must get through the door!**
- ***System provides lowest false reject rate in difficult environments...0.1%***
 - ***Real world data backs it up, daily***



Systems Operability Checks

- *Daily* – online status check
- *Daily* – database backup
- *Monthly* – summary of invalid cards
- *Annual* – system verification...test of database



Summary

- *Applied Biometric Technology...hand geometry*
 - Easy to use and extremely reliable
 - Highly effective for access control validation
 - Fast throughput
 - Decreases vulnerability while increasing security
 - Well suited for airport environments
 - Economically feasible



Thank You

Questions ?